AMIT

Education and Q&A Panel

November 17, 2010

AMIT Education and Q&A Agenda

Topic I – Data Loading

1.	Consumption Data Processing and Timeline		
2.	TDSP to SMT Portal and to SMT FTPS Statistics		
3.	LSE Purpose, Usage and File Format Discussion		
4.	TDSP Load to ERCOT and Use / Settlement Statistics		
5.	ERCOT Processing of Actual vs. Estimates for LSE Files		
6.	TDSP Processing of Actual vs. Estimates for LSE Files		

7.	Issue 001 We need to set the expectations regarding the LSE file (SMT and ERCOT)
	   A. Completeness (i.e. – number of ESIID records, number of days of usage, etc.)
	   B. Accuracy (i.e. – rebills, cancels, available on the SMT for REPs to retrieve?)
	   C. Original intent of LSE
	   D. Future intent of LSE		

8.	Issue 002 When a meter is provisioned and we've gotten meter readings for 2 – 3 months, and then there is a period of time when the meter is not provisioned in SMT, so there's a gap in usage
	   A. What happens with the meter reads and the LSE?
	   B. What happens with the settlement?
	   C. What happens with HAN devices?
	   D. How long is the gap by TDSP?		

9.	TDSP Current Processing for a REP Change		
10.	Facilitated – What is missing, what is needed, and what needs improvement		

AMIT Education and Q&A Agenda

Topic II – Viewing, Reporting, and Using Energy Data

1. SMT Overview and Statistics to Date		

2.   SMT Energy Data Viewing and Reporting Portal Functionality
     A. TDSP
     B. REP
     C. Customer
     D. Supplemental		

3.   Issue 011 Customers do not understand the gap between when their meter is installed and when it is available on SMT
     A. Provisioned vs. TDSP Data sent to SMT
     B. CR001 Smart Meter Does Not Exist		

4. Release 2.1 CR004 Remove 48 Hour Restriction		
5. SMT FTPS Functionality – Purpose and Format		
6. SMT Energy Data APIs Functionality – Purpose and Format		
7. Issue 005 Understanding the Functionality and Benefits of FTPS vs. API		
8. ERCOT AMS Data Availability		
9. Facilitated – What is missing, what is needed, and what needs improvement		

AMIT Education and Q&A Agenda

Topic III – SMT HAN Functionality

1. SMT HAN Overview and Statistics to Date		

2. SMT HAN Portal Functionality
    A. TDSP
    B. REP
    C. Customer		

3. SMT HAN APIs – Purpose and Formats		
4. SMT HAN Starter Kit – Purpose, What is in the Kit, and How to Get It		
5. Issue 013 There are issues getting HAN devices provisioned to meters that do not have the latest hardware and firmware		
6. Issue 014 How do we know the current hardware and firmware version on the meter?		
9. Facilitated – What is missing, what is needed, and what needs improvement		

Topic IV – SMT Help Desk

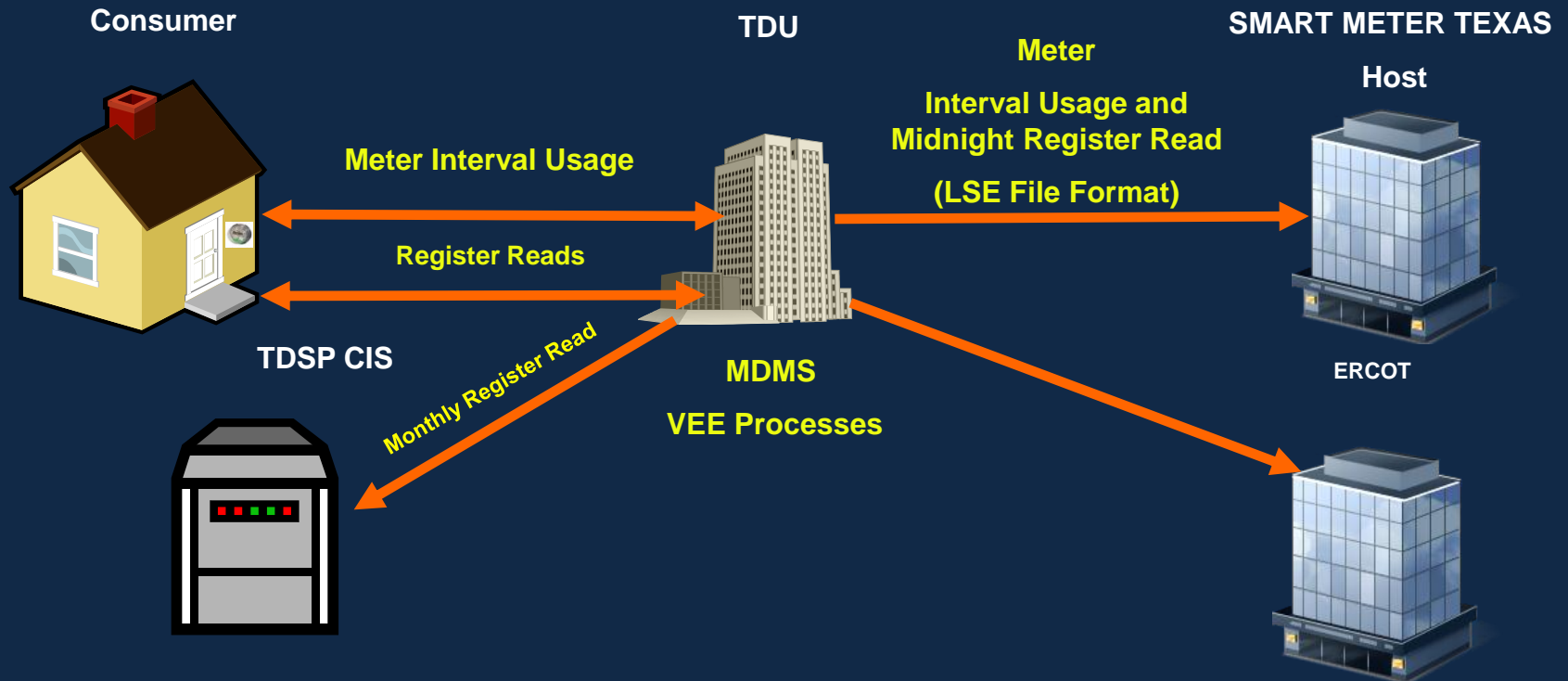|		

1. SMT Help Desk Usage
    A. Phone Number
    B. Call Help Desk Immediately
    C. Call Other Resources Secondary		

Topic I – Data Loading

Consumption Data Processing and Timeline

Current Day

HAN Device (Real-Time Display)	Interrogation Meter Reading Process (Interval Usage and Register Reads)	MDMS (Validate And Estimating Processes)

Day 2

LSE Files sent to ERCOT and Smart Meter Texas	Missing Interval Monitor runs 3 x Day for current day plus 4 Days. .LSE file created for missing intervals. Sent to ERCOT and SMT	MDM sends to CIS 1 reading per premise correlated to billing cycle

TDSP to SMT Portal and SMT FTPS Statistics

- Release 1 SMT portal data load statistics reported 6 – 12 hour load windows from receipt of TDSP LSE files to SMT portal for accessibility and viewing for 500,000 ESIIDs

- Release 2 provided data load time reductions and with optimization of data load windows

- Current SMT LSE consumption load statistics are the following:

  - Load time from receipt of TDSP 2,500,000 data records in LSE files to SMT FTPS is running an average of less than 2 minutes

  - Load time from receipt of TDSP 2,500,000 LSE files to SMT Portal is running an average of 4.5 hours

LSE Purpose, Usage and File Format Discussion

- LSE file purpose – The LSE (Lodestar Enhanced) file is an ERCOT specified file format (CSV like) for TDSPs to provide data to ERCOT for AMS usage data loading.

- Usage provided within LSE file provided to ERCOT –
  - Provided daily
  - 15 minute Settlement Quality Meter Data for provisioned Advanced Metering System (AMS) meters
  - One data record is for one ESI ID for one operating day containing 92-100 intervals
  - Each file shall contain up to, but not to exceed, 50,000 data records. For optimum processing at ERCOT, it is suggested that the file contain a minimum of 10,000 data records.
  - Files shall be zipped prior to Pretty Good Privacy (PGP) encryption and compression.

LSE Purpose, Usage and File Format Discussion

- Documentation for file format details can be found in the Retail Market Guide Section 9 Appendix G, as well as the Retail Section of http://www.ercot.com/services/mdt/userguides/ - document: Interval Data LSE File Specification v1.2
    - Highlights:
        - Header row one – ESIID, Channel, Start, Stop, additional attributes
        - Header row two – Meter information
        - Header row three – Unique transaction ID
        - Header row four – Timestamp, Origin
        - Header row thirty – MRE, TDSP sender and ERCOT receiver dunsnumber
        - Detailed record – Interval value and status code (A or E)

LSE Purpose, Usage and File Format Discussion

Example of complete data record:

```
00000001,100000000000000,4,20080510000000,20080510235900,Y,N
00000002,0,0,0,,0,,900,01,1,-1,0.0,0.0,CST
00000003,UNIQUETRANID0123456789
00000004,20080519112825,M
00000030,ATTRIBUTE_VALUE_PAIRS,MRE=666666666,Sender=666666666,Receiver=183529049,REP=111111111
10000000,68.29,A,,69.17,A,,67.99,A,,67.99,A,,
10000001,66.81,E,,66.52,E,,67.11,E,,67.11,E,,
10000002,67.11,A,,66.52,A,,66.81,A,,66.82,A,,
10000003,69.47,A,,107.73,A,,230.76,A,,228.11,A,,
10000004,69.47,A,,107.73,A,,230.76,A,,228.11,A,,
10000005,231.94,A,,228.4,A,,230.17,A,,233.7,A,,
10000006,25.18,A,,21.95,A,,246.36,A,,247.83,A,,
10000007,259.61,A,,283.45,A,,303.16,A,,313.76,A,,
10000008,325.83,A,,336.72,A,,350.26,A,,354.38,A,,
10000009,358.5,A,,30.27,A,,361.74,A,,366.45,A,,
10000010,365.86,A,,369.39,A,,369.69,A,,368.21,A,,
10000011,371.45,A,,39.69,A,,367.63,A,,369.39,A,,
10000012,371.15,A,,369.68,A,,368.51,A,,369.98,A,,
10000013,370.57,A,,373.51,A,,373.22,A,,369.39,A,,
10000014,370.86,A,,369.98,A,,368.81,A,,365.57,A,,
10000015,364.39,A,,34.68,A,,36.8,A,,284.03,A,,
10000016,309.64,A,,308.76,A,,302.88,A,,296.1,A,,
10000017,286.68,A,,279.91,A,,24.29,A,,189.55,A,,
10000018,190.43,A,,161.59,A,,10.68,A,,114.79,A,,
10000019,108.9,A,,107.14,A,,101.55,A,,98.61,A,,
10000020,94.78,A,,4.49,A,,95.66,A,,92.42,A,,
10000021,84.77,A,,80.94,A,,80.94,A,,80.35,A,,
10000022,80.35,A,,80.35,A,,7.29,A,,77.41,A,,
10000023,77.71,A,,76.82,A,,77.41,A,,7.82,A,,
```

TDSP Load to ERCOT and Data Use in Settlement Statistics

As of November 2010

- Data loading statistics
  - Number of AMS interval data records loaded at ERCOT ~340 million since November 2009
- Settlement Statistics
  - 10/26/2010 Initial
    - ~1.8 million with .32% of the Active ESIIDs estimated by ERCOT
  - 9/7/2010 Final
    - ~1.44 million with .19% of the Active ESIIDs estimated by ERCOT
  - 5/7/2010 True Up
    - ~766K with .26% of the Active ESIIDs estimated by ERCOT

ERCOT Processing of Actual vs. Estimates for LSE Files

- TDSPs are required to provide Settlement Quality Meter Data to ERCOT and shall ensure that at a minimum the VEE requirements as specified in the Uniform Business Practices (UBP) standard have been properly performed on such data – excluding Spike Check and Reactive channel check for kWh data.

- ERCOT will process AMS data through the data loading process that is provided with either an A = Actual or E = Estimated status code at the interval level. Both go through the same loading routine.

- ERCOT uses the loaded AMS data from the TDSPs in the data aggregation process. Actual and Estimated intervals are treated the same.

- During the data aggregation process, if usage is missing for an active AMS ESI ID, ERCOT will:
    - First - attempt to use a WS proxy day to estimate the usage based on historical usage within 12 months of the operating day
    - Second – attempt to use a NWS proxy day to estimate the usage based on historical usage within 12 months of the operating day
    - Third – if no historical exists, the ESI ID will use the default profile during settlement

TDSP Processing of Actual vs. Estimates for LSE Files

CenterPoint Energy

➢ Interval is Missing, Estimate is calculated by MDM following UBP VEE standards

- ➢ Based on historical like day

- ➢ Based on Class Load Profile

- ➢ Zero Usage if meter indicated outage during interval period.

➢ Register Read is missing .LSE will not contain midnight read (Oncor will provide Register read in all LSE data)

➢ Missing Interval monitor service is run for 5 previous days to obtain actual for any estimated intervals. Supplemental .LSE files created for actual usage obtained. (Oncor does not perform this function)

Oncor – reference the impeded VEE Tutorial presented by Oncor to Retail Metering Working Group June 2009

* See attachment A for Oncor detailed VEE process

Issue 001 We need to set the expectations regarding the LSE file (SMT and ERCOT)

- ➤ Completeness (i.e. – number of ESIID records, number of days of usage, etc.)

- ➤ Accuracy (i.e. – rebills, cancels, and available on the SMT for REPs to retrieve?)

- ➤ Original intent of LSE

- ➤ Future intent of LSE

Issue 001 We need to set the expectations regarding the LSE file (ERCOT)

ERCOT
- Completeness
    - Each data record will contain
        - One ESI ID for one operating day
        - All 15 minute intervals for the operating day (92-100) with either an A or E status code
- Accuracy
    - In lieu of a cancel/re-bill process, AMS data has a replacement function. Once an AMS data record is loaded at ERCOT, if the TDSP sends another version of the data record that passes the business validations, it will delete the existing record at ERCOT and insert the new version into ERCOT systems.
- Original intent of LSE
    - AMS usage data format for data loading at ERCOT
- Future intent of LSE
    - Continued use of LSE file format for data loading at ERCOT

Issue 001 We need to set the expectations regarding the LSE file (SMT)

- Completeness)

  - SMT 1 File/TDSP/REP up to 50k records

  - ERCOT

    - Minimize the # Files, can combine REPs into same file

- Accuracy (i.e. – rebills, cancels, and available on the SMT for REPs to retrieve?)

  - Interval Data is not reposted after billing change in CIS. (Ex. Meter Tampering. Data not re-profiled.)

- Original intent of LSE –

  - ERCOT Settlement

  - Customer insight in to 15 minute interval data usage data

Project Assumptions are decisions the Project Team believes WILL be made for the project but may or may not be valid.	
ID	**ASSUMPTION**
A- 001. P2	15 minute interval data will be KWH metered data and the intervals may not, in some circumstances, add up to the billed usage, if there has been a correction or an adjustment, it will be notated.

Accuracy

- TDSPs do not adjust any interval data when a cancel/rebill is done

- ERCOT will receive a replacement of the 810 invoice and 867_03 usage

Issue 002 When a meter is provisioned and we've gotten meter readings for 2 – 3 months, and then there is a period of time when the meter is not provisioned in SMT, so there's a gap in usage

➢ What happens with the meter reads and the LSE?

➢ What happens with the settlement?

➢ What happens with HAN devices?

➢ How long is the gap by TDSP?

Issue 002 When a meter is provisioned and we've gotten meter readings for 2 – 3 months, and then there is a period of time when the meter is not provisioned in SMT, so there's a gap in usage
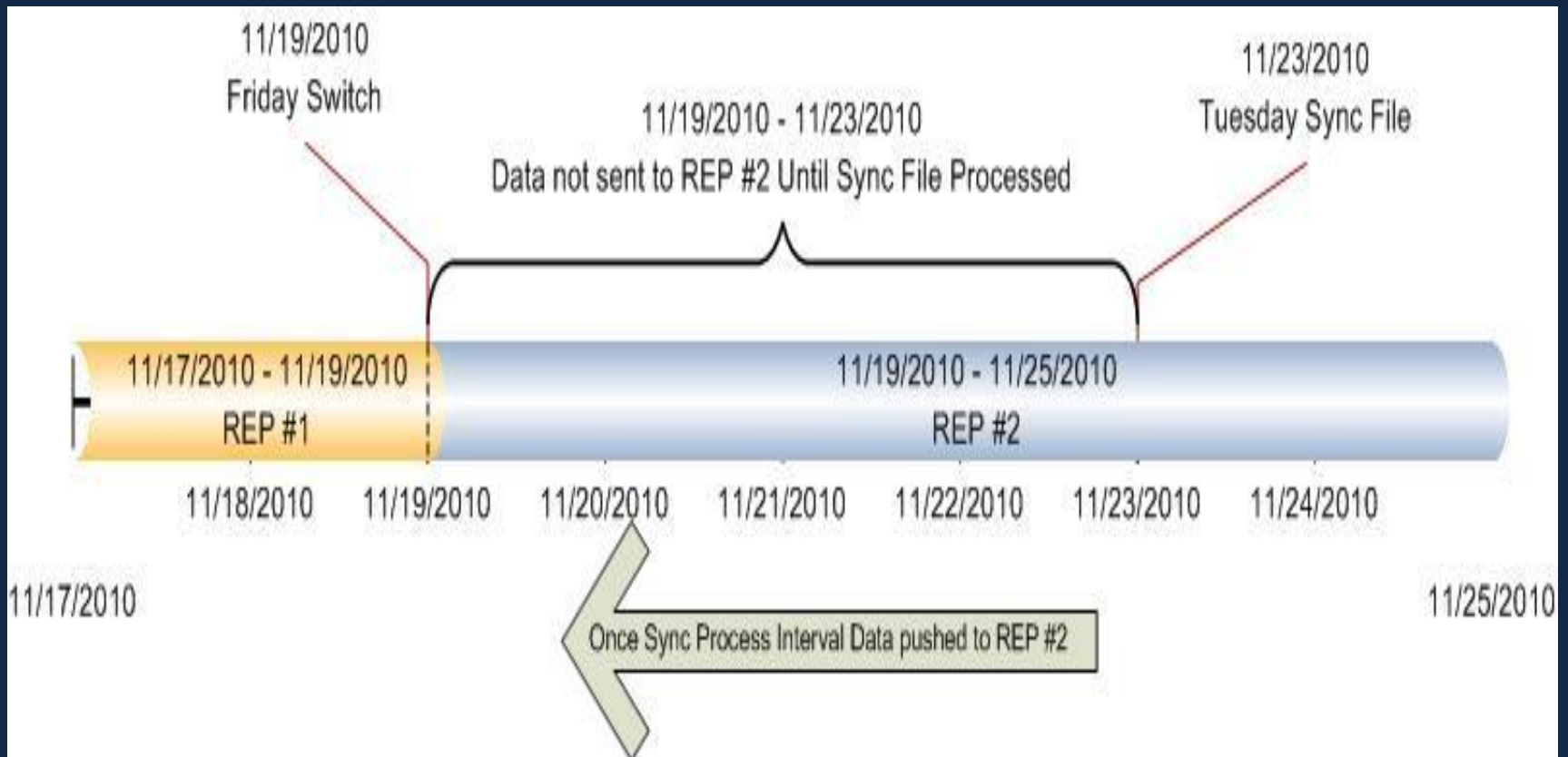
This scenario happens on an AMS to AMS Meter Exchange
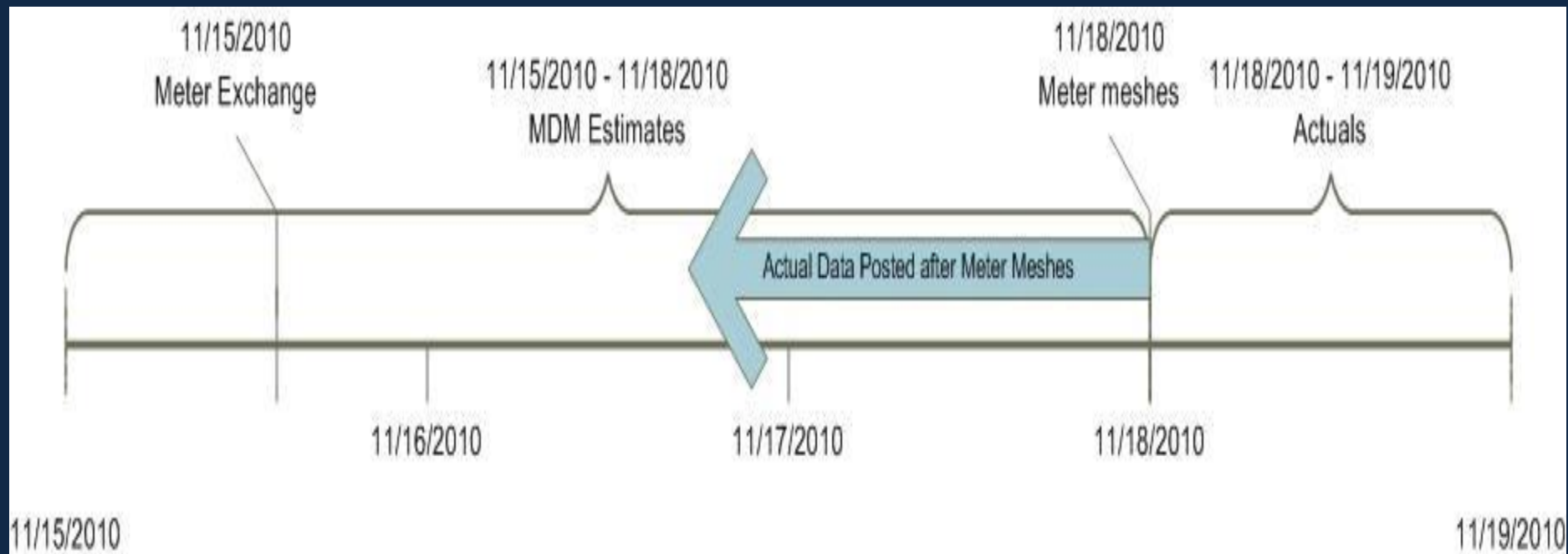
➢ What happens with HAN devices after Meter Exchange?
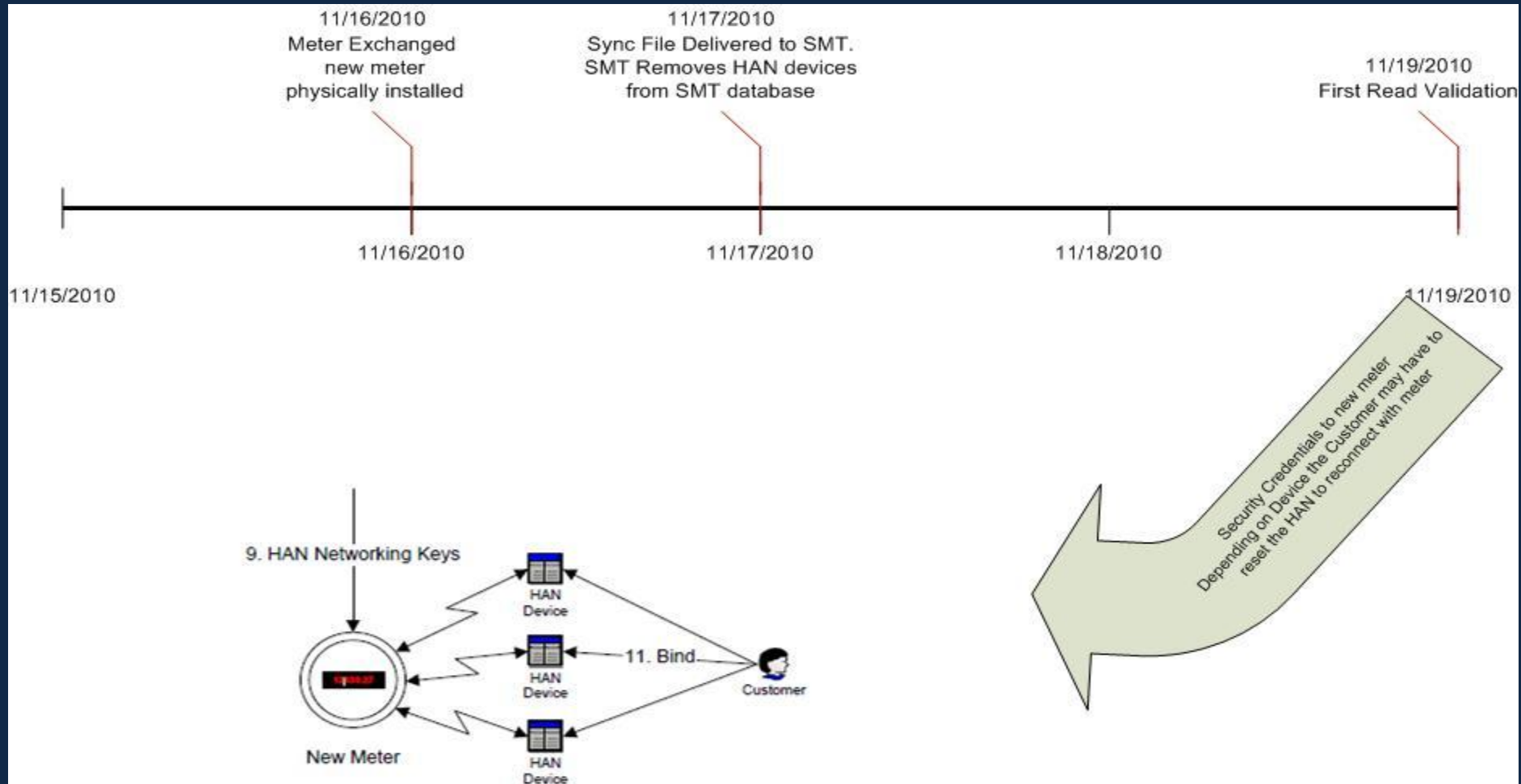
CenterPoint Current Processing for REP Change

REP change data processing

- AEP sends interval data via the SMT to the new REP the next day

- Interval data to ERCOT is delayed 5 days

Facilitated

What is missing, what is needed, and

what needs improvement

Topic II –

Viewing, Reporting, and Using Energy Data

SMT Overview and Statistics to Date

1. Points of reference include three major releases:
    I. Release 1 –
        - January 31, 2010 Infrastructure Release with Data Repository, FTPS, and APIs
        - March 15, 2010 Go Live Launch of the Smart Meter Texas Online Portal
    II. Release 2 – August 8, 2010 Go Live Launch
    III. Release 2.1 Change Requests - Winter

2. Release 2.1 is well under way 75% through with development, SIT test under way and UAT testing tentatively scheduled for 11/29/10 start

3. Release 2.1 includes the following change request items
    I. CR003 – Enhance Bar Graphs
    II. CR004 – Remove 48 Hour Restriction on Viewing of Usage Data
    III. CR006 – Support Functionality for User Testimonials
    IV. CR010 – Develop a Spanish Landing Page
    V. CR012 – Enhance Friends and Family Functionality for Improved Usability
    VI. No CR – Change Behavior of Tables and Graphs to Shows Dates for Days with No Data

SMT Overview and Statistics to Date

- Statistics
  - 2,136,293 AMS meters installed
    - Oncor – 1,365,396
    - CenterPoint – 611,637
    - AEP Central – 113,271
    - AEP North – 45,989
  - 7,041 residential users have created accounts
  - 4 TDSP entities created and registered successfully on SMT portal
  - 110 TDSP users created and 11 administrators created
  - 38 REP entities created and registered successfully on SMT portal
  - 174 REP users created and 78 administrators created
  - 72 NRC (Commercial) entities created
  - 4 NRC users created and 72 administrators created
  - 1 Regulatory entity created
  - 1 Regulatory user and 1 administrator created

SMT Overview and Statistics to Date

- Statistics continued..
  - 107 Friends and Family agreements created
    - 5 accepted agreements
    - 6 pending agreements
    - 81 expired agreements
    - 15 revoked agreements
- Usage for October
  - Average 350 logins per day with low of 145 (Halloween) and high of 499
  - Total logins 10,912 for the month
  - 1337 views of the English flash demo
  - 5 views of the Spanish flash demo

SMT Overview and Statistics to Date

Smart Meter Texas		
Period:11/02-11/08/2010	Week	MTD
Total Calls	81	93
Total Tickets	70	82
User Types		
TDSP	0	0
REP	1	2
Residential	68	79
Non-Residential	1	1
Ticket Types		
Meter Not Found	18	19
Web Site Access Issues	17	20
Information	19	25
Registration	11	12
HAN Provisioning	2	2
Usage Reports	3	4
TDSP Defects Reported	0	0
Friends and Family	0	0

Smart Meter Texas Help Desk - Request Types		
Count	Issues Reported / Questions	Resolution
19	Information - General	Answered general questions such as user did not know how to find ESIID, etc.
18	Meter not found	Tickets for users claiming meter was installed over 60 days ago were directed to the Portal team; others were advised of timeline required prior to meter data appearing in the Portal.
11	Registration assistance	Walked user through registration process
10	Password user name or password invalid	Forgotten user names or incorrectly typed passwords
3	Usage data questions	Answered usage data questions, e.g., how to access data, why isn't data realtime?, etc.
3	Registration error- Email/Browser	Receiving error 500 when attempting to register, customer was using Mozilla, advised to try Internet Explorer instead
2	HAN Provisioning	Assigned to Portal Support queue for resolution
2	Temp password not working	Temp password was entered incorrectly
1	Not receiving initial temp password	Walked through password reset process
1	User name already exists	Informed customer they would need to use another user ID
0	Web site down	Assigned to Portal Support queue for resolution
0	Invalid request error	Received invalid request error when attempting to register
0	REP Registration packet request	Walked REP through request process
0	TDSP Defects Reported	TDSP reporting defects for level 2 action
0	Friends and Family	Provided info on Friends and Family Feature
70		Reporting Period: 11/02/2010-11/08/2010

Overview

- User types in the Portal:
  - Residential Customers
  - Business Customers (Admins and Users)
  - Friends
  - RORs (Admins and Users)
  - TDSPs (Admins and Users)
  - Regulatory (Admins and Users)
- Reports Available:
  - 15 Minute Interval Report
  - Daily Meter Reads Report
  - Monthly Usage Report
- Version Updates for all report types is available for RORs and TDSPs.
- Users can view reports online or submit an export request to receive a file with the reports through email.

SMT Energy Data Viewing and Reporting Portal Functionality

Availability of Data

USAGE REPORTS CONSIDERATIONS	Daily Usage (15 minute Interval)		Daily Meter Reads		Monthly Billed Usage	
	ESI IDs	DAYS	ESI IDs	DAYS	ESI IDs	DAYS
*Results will be displayed **on the screen** if you select:*	1	40 days or less	1	1200 days or less	1	24 months or less
A File with the results will be created and you will receive an order number for your request (file is not created in real time) if you select any of these combinations:	1	More than 40 days	1	More than 1200 days	NA	NA
	More than 1	Any number of days	More than 1	Any number of days	More than 1	Any number of months
Usage Data Available for View or Export for Customers, Friends and Regulatory	Last 13 months		Last 13 months		Last 24 months	
Usage Data Available for View or Export for REPs or TDSPs	Last 48 months		Last 48 months		Last 24 months	

Accessing Usage Reports

- Online Demo
  - ROR
  - Residential Customer
  - Friend
- Step to Step instructions can be found in the User Guides (under the Help Tab once you have logged in to your account in SMT)
  - REP User Guide: Usage Reports: Section 8.
  - Customer User Guide: Usage Reports. Section 10.
  - Both Guides contain an Appendix A: Working with CSV Files

Issue 011 Customers do not understand the gap between when their meter is installed and when it is available on SMT

➢ Provisioned vs. TDSP Data sent to SMT

➢ CR001 Smart Meter Does Not Exist

Issue 011 Customers do not understand the gap between when their meter is installed and when it is available on SMT

- CenterPoint and Oncor send interval data to provisioned meters only. Installed meters can take up to 60 days to become provisioned

- AEP sends interval data to SMT the next day regardless of whether the meter is market provisioned or not. The provisioning of a meter only affects data sent to ERCOT and not SMT

CR 001 – Meter does not Exist Message

Changes Implemented

- Updated Error Message at Registration
- Updated Error Message when Customer attempts to add meter to an existing Account.
- Updated FAQs.
- Updated Contact Us Page.

SMART METER TEXAS™

Español

Register

Home > Select Account Type >

Create a Residential Customer Account (?)

- Provide the following information to obtain access to this web site. If your meter number starts with a letter, please enter the number without the letter.
- Confirmation email will be sent to the email address you provide
- To complete the initial registration you must follow the instructions provided in the email.

Smart Meter does not exist. Please check your entry or call your Retail Electric Provider.

* Indicates a required field.

Personal Information

*	First Name:	Test
	Middle Initial:	
*	Last Name:	Test
	Suffix:	
	Phone:	__ - __ - __ Ext. __
*	Email address:	test@email.com
*	Re-enter email address:	test@email.com
*	Language Preference:	English

Error Message was changed to:

Your registration request cannot be completed at this time due to one of the following reasons:

- You may not have a Smart Meter yet. To determine when you will have a Smart Meter installed, refer to the utility websites.
- You may have incorrectly entered the ESI ID number or meter number. If you are having trouble finding this information on your electric bill, please contact your Retail Electric Provider.
- A meter with a digital display is not necessarily a Smart Meter. If you have any questions about what kind of meter you have, please contact your Retail Electric Provider.
- Your meter information may not be available for access through the Smart Meter Texas portal until up to 60 days after installation of the Smart Meter. If you have questions, please contact your Retail Electric Provider.

Your registration is very important to us. For more information on this topic, please refer to the FAQs.

SMART METER TEXAS™

Demo Customer
Log Out

Home **My Account** **Usage** **Help** **Notices**

My Smart Meters
HAN Devices
My Profile

My Account / My Smart Meters / Add Meter>

Add a Smart Meter ?

❌ Smart Meter does not exist. Please check your entry or call your Retail Electric Provider.

* indicates a required field

Meter Identifier

Description: [   ]

* ESI ID: [   ]

* Meter Number: [   ]

Terms and Conditions

WEBSITE TERMS AND CONDITIONS
Created: October 2009

These Website Terms and Conditions (these "Terms") set forth the terms and conditions
for use of this website (this "Website") to gain access to the Texas Common Portal and
Data Repository (the "Web Portal"). In these Terms, "you" or "your" refers to any user of
this Website, and "we" or "us" or "our" refers to the owner(s) or operator(s) of this
Website.

Please read these Terms and the information referred to or linked to in these Terms
carefully and ensure you understand them. From time to time, we may unilaterally modify
these Terms, so it is important that you review these Terms every time you use this

Error message was changed to:

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SMART METER TEXAS™

A very **smart way** for Texans to **manage** electricity!

Current User Log In

User ID:

Password:

New User Register   Log In

Forgot User ID?
Forgot Password?

Overview | TDSPs | REPs | Learn More

Welcome
See a Demo
FAQs
Security
Contact Us
About Us
Register Now

Frequently Asked Questions

Which meters can I access?

For data from your meter to be accessible on this web site, you must have a Smart Meter installed and be in an area of Texas open to electric competition.

- If you have multiple meters, only data from your Smart Meters will be available.
- Data from traditional non-automated meters is not available.
- Contact your Retail Electric Provider if you are not sure what types of meters are installed on your property.

Customers may use the Smart Meter Texas web site to access usage data from their own Smart Meters.

- You will need the Electric Service Identifier (ESI ID) and meter number for each Smart Meter that you wish to access.
- Your ESI ID number is on your electric bill. Your meter number is on the meter itself and may be on your electric bill.
- If you need help finding them, contact your Retail Electric Provider.
- Businesses may designate Administrators to register and manage SMT accounts.

Go to top

FAQs were changed as shown.

Second bullet change:
Remove "non-automated"

(add bullets after 2nd bullet)

- There are many digital meters in Texas but not all digital meters are Smart Meters.

- After a Smart Meter is installed, your meter information may not be available for access through the Smart Meter Texas portal for up to 60 days after installation of the Smart Meter.

SMART METER TEXAS™

A very **smart way** for Texans
to **manage** electricity!

Overview   **TDSPs**   **REPs**   **Learn More**

- Welcome
- See a Demo
- FAQs
- Security
- Contact Us
- About Us
- Register Now

Frequently Asked Questions

Why aren't all of my customers' meters available?

For data from a meter to be accessible on this web site, the premise must have a Smart Meter installed and be part of the Texas Choice program as defined by the Public Utilities Commission of Texas (PUCT).

- If your customer has multiple meters, only data from the Smart Meters will be available.
- Data from traditional, non-automated meters is not available on this web site.

Go to top

Second bullet change:
Remove "non-automated"

FAQs were changed as shown.

(add bullets after 2nd bullet)
- There are many digital meters in Texas but not all digital meters are Smart Meters.
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Overview   TDSPs   REPs   Learn More

- Welcome
- See a Demo
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- Security
- Contact Us
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- Register Now

Contact Us

Call 1-888-616-5859 for web site technical support. The Smart Meter Texas (SMT) team can assist with issues about:

- Setting up a SMT account,
- Login to your account,
- Changing your password,
- Missing or incorrect data in your account or usage reports,
- Other SMT account specific questions.

The following text was inserted below the existing bullets (as a separate paragraph – not an additional bullet):

For any other questions regarding Smart Meters, please contact your Retail Electric Provider.

Release 2.1 CR004 Remove 48 Hour Restriction

CR - 004 Remove 48 Hour Restriction Overview

- Description:
  - Remove the restriction that prevents users from selecting a date within the last 2 days for the 15 Minute Interval Report and the Daily Meter Reads Report.
  - The process of usage data transmission from the TDSPs to SMT has been accelerated; therefore, depending on the time of the day, SMT could display data that is newer than 2 days ago.

SMT FTPS Functionality – Purpose and Format

Overview

- SMT posts the 15 Minute Interval and Daily Meter Reads files (PGP encrypted) for all of the ESI IDs under a ROR DUNS in a directory on the SMT FTPS site daily.

- Each ROR has access to the directory with their usage data.

- Daily and Interval Usage Data files will be held on the FTP site for 10 days.

➢ Contact the SMT Help Desk for documentation or to be set up for integration to the SMT FTPS

SMT FTPS Functionality – Purpose and Format

Checklist for REP →SMT FTPS connectivity

✓ **SSL Public certificate**	• REPs provide their FTPS client security certificate (self signed for testing & certificate issued by public trusted authority for production) to SMT • Key point: One certificate per machine – the Common Name "CN" in the certificate should match with the host name of the server request initiated
✓ **Public PGP Key**	• REPs to generate PGP key pair & provide their Public PGP Key to SMT • If the files are pulled from a 3rd party, one certificate per REP account is required
✓ **External public IP address**	• REPs to provide their public external IP address from where the request will be originating • If the REP planning to pull the files from multiple machines, provide all the public IP addresses info applicable
✓ **REP DUNS info**	• REPs to identify the DUNS numbers associated with their entity to SMT

✓ **Connectivity & procedure to download the files**	• SMT Operations team to configure REP account and provide the documentation addressing:
	  • The SMT FTPS host name and IP address
	  • REP Login user name & password for connecting to the FTPs site
	  • Sample instructions for connecting to the FTPS site via Core FTP client
	• REP to coordinate the initial setup, download of files with SMT

SMT FTPS Functionality – Purpose and Format

SMT FTPS Interface
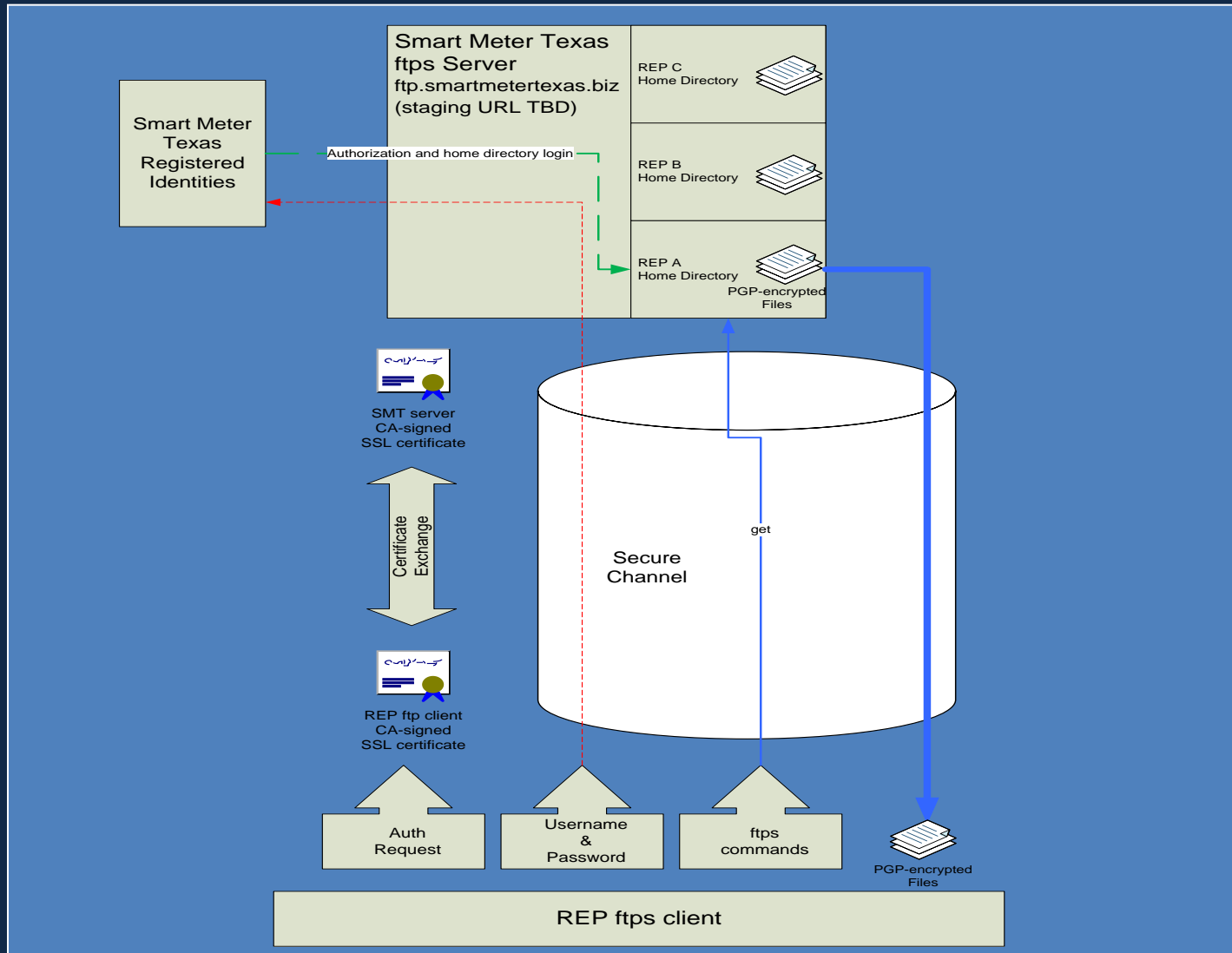
SMT Energy Data APIs Functionality – Purpose and Format

Overview

- RORs are able to generate ad-hoc requests for data to SMT:
    - For a specific group of ESI IDs (up to 50,000 per request)
    - For the three usage reports:
        - 15 Minute Interval (up to the last 48 months).
        - Daily Meter Reads (up to the last 48 months).
        - Monthly Usage Report (up to the last 24 months).
- Results are placed in the ROR FTP Folder and will be held for 10 days.

SMT Energy Data APIs Functionality – Purpose and Format

API Integration

1. Contact the SMT Help Desk to Request API specification document .
2. Prerequisites for API Testing:
   - External, internet routable IP addresses for REP web services servers received by SMT team 3 days in advance (required time to add firewall rules)
   - The REP firewall must allow outbound traffic on ports 5200-5229 from the web service consumer server(s)
   - SSL & Signing certificates obtained by REP (self signed are ok for testing, but SMT requires CA signed certificates for production)
   - REP public PGP encryption key received by SMT team 3 days in advance (required time to add in FTP site)
   - REP has SoapUI available to verify connectivity
   - Identify the REP DUNS numbers associated with the REP entity

3. Contact SMT Help Desk to receive the URL, Public key, Certificates info, login account & credentials info via email

Issue 005 Understanding the Functionality and Benefits of FTPS vs. API

- FTPS
  - SMT posts automatically Usage Files for all of the RORs ESI IDs in the REP Directory daily (for the previous day).
  - 15 Min Interval and Daily Meter Reads are available.
  - Files are available for 10 days.

- API
  - SMT allows ROR to originate ad-hoc requests at any time (up to 50,000 ESI IDs per request).
  - ROR can request all three report types: 15 Min Interval (up to the last 48 months), Daily Meter Reads (up to the last 48 months) and Monthly Usage Report (up to the last 24 months).
  - Result files are posted in the ROR Directory in the FTPS site and are available for 10 days.

ERCOT AMS Data Availability

- <u>Interval Data LSE Activity Report</u> - TDSPs receive this report at the conclusion of each LSE data file that is attempts to load into ERCOT systems
  - \# produced since 11/2009 – ~42,000
- <u>Supplemental AMS Interval Data Extract</u> – TDSPs and REPs may schedule to receive this extract from ERCOT. It is produced daily and contains the AMS usage data that was loaded in ERCOT systems 3 days prior. Used in conjunction with ESIID Service History & Usage Extract.
  - \# market participants subscribed to date - 73
  - \# produced since 11/2009 – ~14,600

- <u>Missing Consumption Report</u> – TDSPs receive this report daily providing a list of ESI IDs that do not have usage data loaded for settlement for SYSDATE – 38 days

- <u>ESI ID Web Services available for ad-hoc data querying</u>:
  - # produced since 11/2009 - ~500
    - Provide AMS interval data for a trade date
    - Provide ESIIDs where AMS interval data not loaded for a trade date
    - Provide AMS interval data for ESIIDs I own

Facilitated

What is missing, what is needed, and

what needs improvement

Topic III –

SMT HAN Functionality

SMT HAN Overview and Statistics to Date

1. CenterPoint and Oncor are successfully underway with their HAN pilot programs that are targeted for completion by end of year.

2. 489 HAN devices distributed
    I. 240 Oncor
        a) 108 Meter Ready
        b) 132 Provisioned
    II. 249 CenterPoint
        a) 1 Pending
        b) 102 Meter Ready
        c) 146 Provisioned

SMT HAN Portal Functionality

Overview

- **User types in the Portal:**
  - Residential Customers
  - Business Customers (Admins and Users)
  - RORs (Admins and Users)
  - TDSPs (Admins and Users)
- **Functionality Available through the Portal:**
  - Provision HAN Devices (up to 5 HAN Devices per ESI ID)
  - Deprovision HAN Devices
  - View HAN Device Details (MAC Address, Installation Code, Provisioning History)
  - View HAN Device History (consolidated Provisioning History of all the HAN Devices associated to an ESI ID).
- Business Customers, RORs and TDSPs Administrators can grant and revoke access to Users within their organizations.
- RORs can also access the HAN Messaging Log through the SMT Portal.

SMT HAN Portal Functionality

Accessing HAN Functionality

- Online Demo
  - ROR
  - Residential Customer
- Step to Step instructions can be found in the User Guides (under the Help Tab once you have logged in to your account in SMT)
  - REP User Guide: Usage Reports: Section 9.
  - Customer User Guide: Usage Reports. Section 11.

SMT HAN Portal Functionality

HAN Devices Status

Status that Take a Slot (presented in the upper portion of the screen)	
Condition	**Status Displayed**
When the Portal accepts the add/provisioning request	Add Acknowledged
When the TDSP acknowledges the receipt of the add request	Add Acknowledged
When the TDSP sends a Pending Provisioning Status	Add Pending
When the TDSP sends a Meter Ready Status	Meter Ready
When the Device is provisioned	Device Added
When the Portal accepts the remove/de-provisioning request	Remove Acknowledged
When the TDSP acknowledges the receipt of the remove request	Remove Acknowledged
When the TDSP sends a Pending De-provisioning	Remove Pending
When a de-provisioning request fails before the de-provisioning is complete by the TDSP	Remove Failed
Status that Take a Slot (presented in the upper portion of the screen)	
Condition	**Status Displayed**
Provisioning Request Rejected by TDSP	Add Rejected
When a the TDSP sends a provisioning failure	Add Failed
De-provisioning Request Rejected by TDSP	Remove Rejected
When the Device is de-provisioned	Device Removed

SMT HAN Portal Functionality
HAN Messaging Log File Elements

Column Name	Description
TDSPDUNSNumber	TDSP DUNS Number
MessageDate	Date the Message Request was sent to the SMT through the API
RequestID	Message Request ID. This is a unique Request ID generated by the SMT. You received this Request ID when you submitted the Message request through the API
MessageCancelationID	Message Cancelation Request ID. This is a unique Request ID generated by the SMT. You received this Request ID when the Message Cancelation Request is submitted through the API (this field is only available for Event Categories CLE, CAL and CSM)
MessageStatusID	Message Status ID. This is a unique Message ID generated by the SMT
ESIID	ESI ID (Electric Service Identifier)
MeterSerialNumber	Meter Serial Number
DeviceMACAddr	HAN Device MAC Address (this field is populated when status is available at the Device level)
EventCategoryID	Event Category. Possible values are: PRM – Price Message LCE – Load Control Event CLE – Cancel Load Control Event CAL – Cancel All Load Control Events STM – Simple Text Message CSM – Cancel Simple Text Message
StatusCode	Message Status Code. Possible values are: RQA – Request Accepted and sent to TDSP ACK – Acknowledgment from TDSP that the message request has been received PEN – Pending STR – Event Started CON – Confirmed Delivery OPT – Opt Out FLR – Failure Delivery
StatusDesc	Message Status Description
StatusTimestamp	Message Status Time Stamp

SMT HAN APIs – Purpose and Formats
API Functionality

- The SMT APIs allow the ROR to:
  - Provisioning HAN devices (1 at a time)
  - De-provisioning HAN devices (1 at a time)
  - Send Zigbee Smart Energy Profile 1.0 messages to HAN devices:
    - Simple Text Messages
    - Cancel Text Message
    - Load Control Messages
    - Cancel Load Control Messages
    - Cancel All Load Control Messages
    - Pricing Messages

➢ Request specification document and SMT HAN Starter Kit from the SMT Help Desk

SMT Han Starter Kit – Purpose, What Is In the Kit, and How to Get It

SMT HAN Starter Kit

- The Starter Kit describes the soapUI that RORs can use to invoke the SMT HAN Web Service interface.
- This Starter Kit comes with the following:
  - SMT HAN interface document – describes interface functions
  - soapUI project – contains XML interface definitions that can be used by the soapUI application
  - SMT's UAT/Staging SSL Certificate

Issue 013 There are issues getting HAN devices provisioned to meters that do not have the latest hardware and firmware

Issue 014 how do we know the current hardware and firmware version on the meter?

Facilitated

What is missing, what is needed, and what needs improvement

Topic IV –

SMT Help Desk

SMT Help Desk Usage

Overview

- Contact Number: 1-888-616-5859
- When to Call:
  - Issues accessing the Portal (User ID, Password, Browser, etc.)
  - Issues using the Portal (Accessing Data, Performing HAN Functions, Administering Accounts, etc.)
  - Issues accessing data in the FTPS Directory.
  - Issues with API Interfaces.
    - Usage Data APIs
    - HAN APIs

Closing Activities

1. Issues List

2. Assign items from Education Session to Working Groups

Attachment A

Process for Performing VEE for AMS
Oncor
Attachment A

AGENDA

o Meter Data Flow

o Uniform Business Practice – UBP

o Inside the MDM

- WAVE
- iWAVE
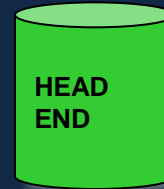- Estimation Hierarchy

o Data Quality Assurance
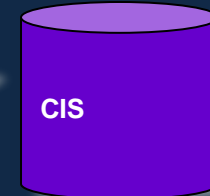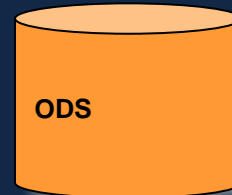
o Summary

METER DATA FLOW
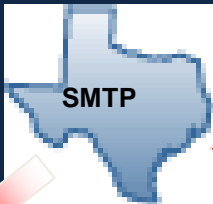

Daily Register Read Interval Usage Data

COLLECTOR

HEAD END

MDMS

"Bill-Cycle" Meter Data

ODS

CIS

SMTP
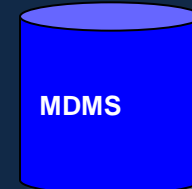
300,000,000
Daily Interval Values
4 Places

Interval & Register Data

Customer

MARKET

Market is defined as ERCOT and REPS

REPS

ERCOT

150,000
Consumption Values
DAILY

UBP IS THE BASIS FOR AMS

UNIFORM BUSINESS PRACTICES

FOR

UNBUNDLED ELECTRICITY METERING

VOLUME TWO

EEI EDISON ELECTRIC INSTITUTE

December 5, 2000

UBP Sponsoring Organizations
The Edison Electric Institute (EEI)
Coalition for Uniform Business Rules (CUBR)
National Energy Marketers Association (NEM)
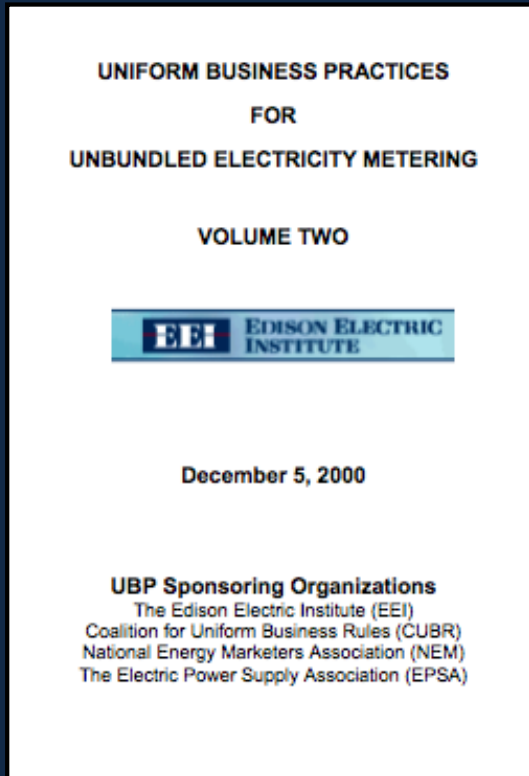The Electric Power Supply Association (EPSA)

VEE FOR MONTHLY DATA
Time check of meter reading device/system (TOU data Only
Time check of meter (applies to meters collecting TOU data only)
High/low usage check
High/low demand check (applies to demand readings only)
Time-of-use check (applies to TOU data only)
Zero consumption for active meters
Usage for inactive meters
Number of dials on meter
Dial decimal quantity
Meter identification

VEE FOR INTERVAL DATA
Time check of meter reading device/system
Meter identification check
Time check of meter
Pulse Overflow check
Test Mode check
Sum check
Spike check
Reactive channel check
High/Low Usage check

http://www.naesb.org/pdf/ubp120500.pdf

UBP IS THE BASIS FOR AMS VEE

UNIFORM BUSINESS PRACTICES

FOR

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http://www.naesb.org/pdf/ubp120500.pdf

AMS VEE RULES
Missing Intervals
Pulse Overflow
Test Mode
Reverse Rotation
Meter Reset
Time Change
Power On/Off
Maximum Demand
Spike Check
Sum Check
Consecutive Zeros

AMS ESTIMATION RULES
Maximum Interpolation Span
Maximum Estimation Span
Like Day Estimation Criteria
Register Allocation
Class Profile Estimation

EXPERIENCE IN THE AMS WORLD MAY INDENTIFY AREAS FOR CHANGE IN THE UNIFORM BUSINESS PRACTICES

PRIOR VALIDATION RULES THAT WERE DESIGNED TO IDENTIFY "HUMAN ERROR" MAY NO LONGER BE APPLICABLE

PRIOR INTERVAL DATA ESTIMATION PROCESSES WERE MANUAL

AEP CenterPoint Energy ONCOR TNMP

VALIDATION RULES EXAMPLE

NUM	RULE	DEFINITION
1	Time check of meter reading device/system	Ensure collection device time clocks are synchronized to the national time standard
2	Time Check of the meter	Ensure meter time clocks are synchronized
3	Time Tolerance Check [meter and data]	Minimize "clock drift" between the meter and the collection device/system
4	"Power-On"	Identify if electricity is currently available at the meter location
5	Pulse Overflow	Identify interval value exceeds the registration range
6	Test Mode	Confirms data collected during test modes are "flagged"
7	Sum Check	Ensure the sum of the intervals matches the Register
8	Usage for Inactive meters	Identify a location that should not be consuming electricity
9	Missing Intervals	Selects how the system will handle missing interval data

ESTIMATION METHOD EXAMPLES

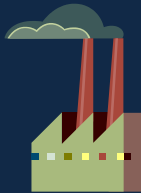*System Allows for GROUP Specific Rules*

Wave performs ADU calculation:
Customer Previous Month X (Group Current Month / Group Previous Month)

iWAVE Calculation:
• Residential Scales ERCOT Forecast Profiles
• C&I Scales the past Same days average shape

✓ **Same Day Average → Tues is Tues is Tues**

✓ **Like Day Average → Weekday, Weekend, Holiday**

✓ **Load Profile Shape**

ESTIMATION IS REQUIRED → **CALCULATE USING FIRST RULE CHOICE** → **CALCULATE USING NEXT RULE CHOICE**

Is the Required Historical Actual Data Available to Use Rule?

73

VISUAL ESTIMATION EXPLANATION

iWAVE
CREATES A "LOAD CURVE" VIA THE ESTIMATION HEIARCHY SELECTED
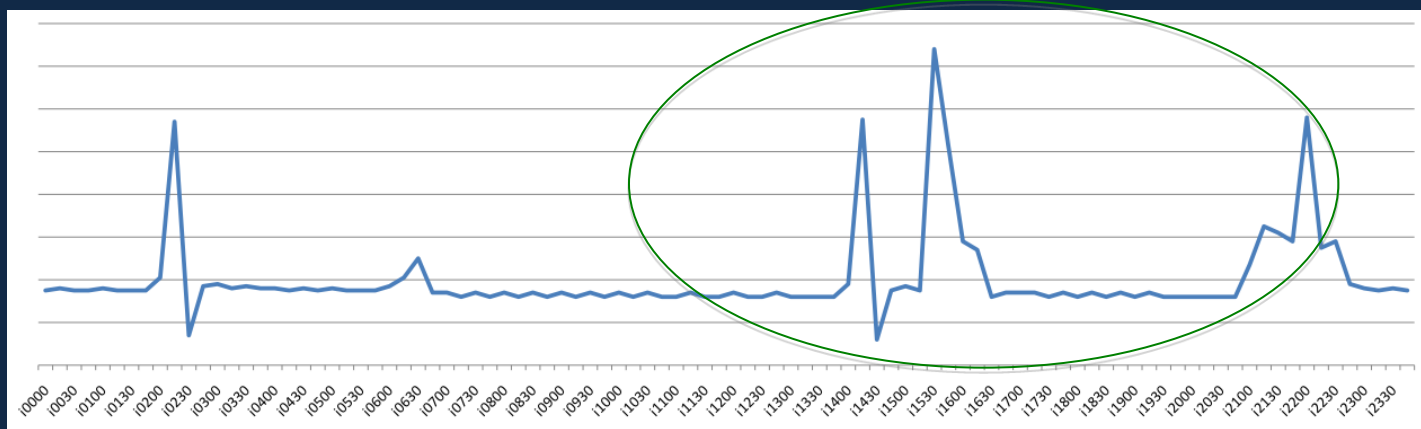
WAVE
SCALES THE "LOAD CURVE" UP OR DOWN AS NEEDED

INITIAL SETTING SELECTED
WAVE

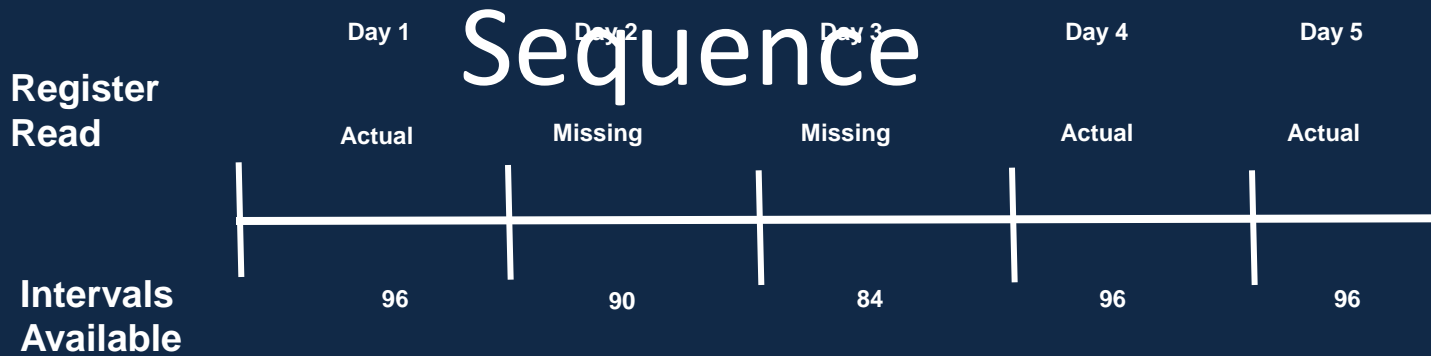|	
Scaled ADU calculated using data for similar customers and for the same customer, location, day type, climate zone from the prior billing month.	1
Scaled average daily usage (ADU) which is calculated using data for similar customers and for the same customer and location from the prior billing month.	2
Scaled average daily usage (ADU) which is calculated using data for similar customers and for the same customer and location from the prior year's same billing month.	3
Calculated average daily usage (ADU) for the same rate code and climate zone as the scaling factor to be applied to the average daily usage (ADU) for the previous billing month for the same customer and location	4
Calculated average daily usage (ADU) for the same rate and climate zone as the scaling factor to be applied to the average daily usage (ADU) for the prior year 's same billing month for the same customer and location	5

INITIAL SETTING SELECTED

iWAVE		
Rule	Priority C&I	Priority Residential
Same days estimation for the same customer and location	1	3
Like days estimation for the same customer and location	2	2
Reference Load Profile Data *	3	1
Static Load Profile Data	N/A	N/A

Example: ESIID Estimation Sequence

Consumption Day

	Day 1	Day 2	Day 3	Day 4	Day 5
Register Read	Actual	Missing	Missing	Actual	Actual
Intervals Available	96	90	84	96	96

DATA Delivered

Initial File

+

| Day 1 | Day 2 Est. Read & Intervals | Day 3 Est. Read & Intervals | Day 4 |

+

Improved File (previous Days)

Re-Est Read & Intervals for: Day 3 & Day 2
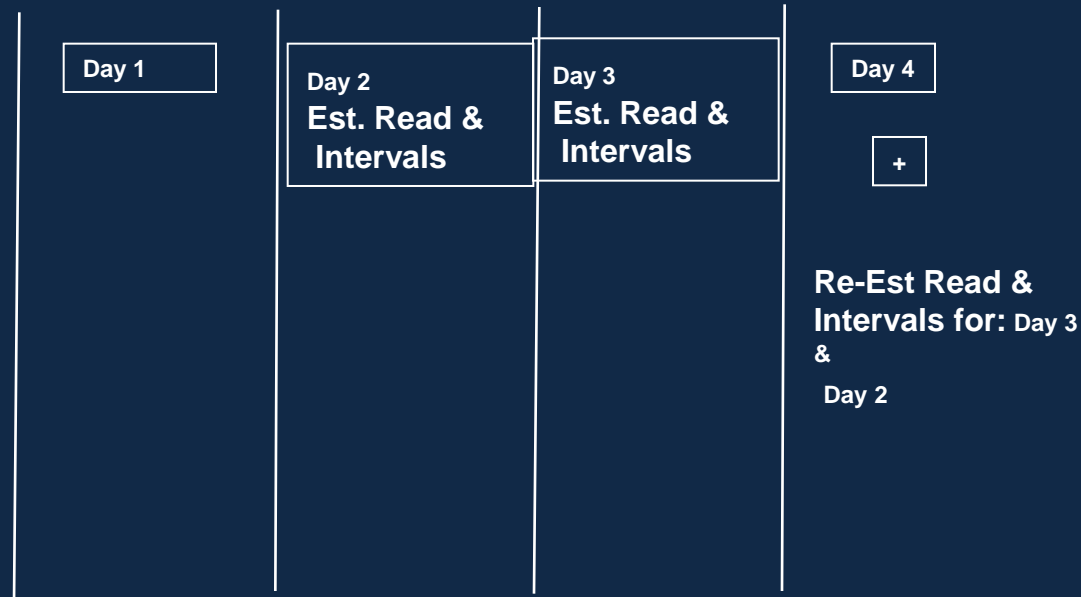
Appendix Slides

AMS System

Business Goals

Read the Meter	Collect the data	Manage the Data	Present the Data

Processes

Routine Reads → Validation Estimation & Editing → Transmit to ERCOT and REPs

Details

RF Meter
- Interval and Register Reads
- Record daily register read

Additional stored data sent: Distributed Generation, TOU, Demand Register and Power Factor

Every 4 hrs

Once Daily at Midnight

Head-End
- Collect
- **+**
- Retrieval Gap Check
- Batch & Push

Every 4 hrs 6x day

MDMS
- Validate file quality
- Flag exceptions
- VEE
- Bill Cycle
- Interval

CIS
- CIS Audit rules
- Billing file created
- EDI Gateway

Wires Billing

ODS

300 Million Reads Daily

Market
- REPs
- ERCOT

150 k Reads Daily

METER DATA FLOW

Daily Register Read Interval Usage Data

COLLECTOR

HEAD END

MDMS
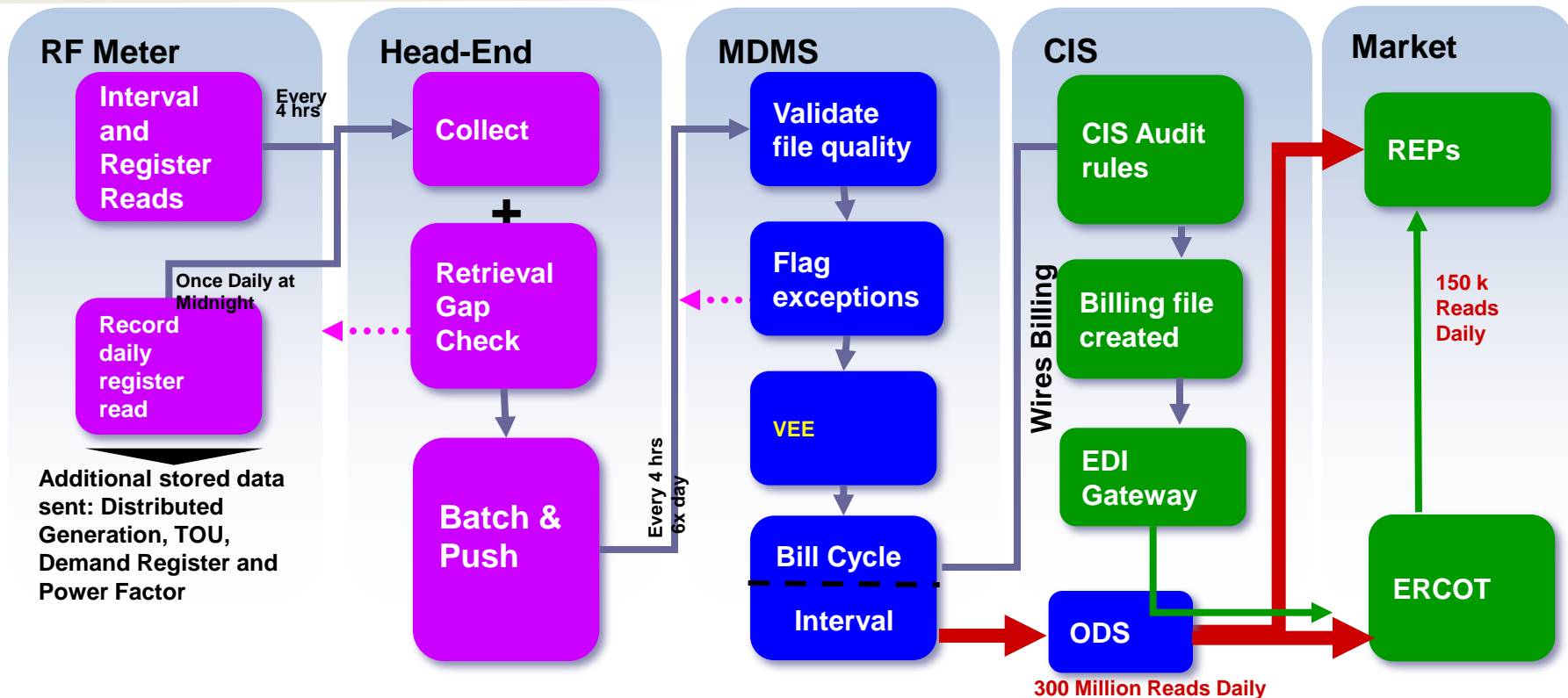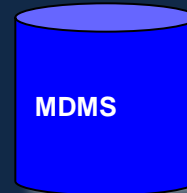
Needed by "Operating Day" +5

Market Settlement Data
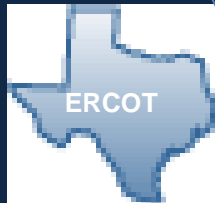
ERCOT

Interval & Register Data

"Bill-Cycle" Meter Data

ODS

CIS
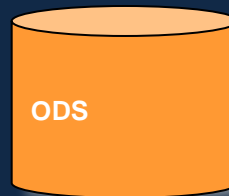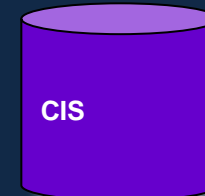
MARKET

All Meters Daily

REPS

Market is defined as ERCOT and REPS

300,000,000 Consumption Values DAILY

150,000 Consumption Values DAILY

Next Day